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substituted alkenyl; and the pharmaceutically acceptable acid addition salts selected from the group consisting of chloride, iodide, fluoride, sulfate, phosphate, acetate and carbonate and a pharmaceutically acceptable carrier thereof.

25. (new) The method of claim 24 wherein said benzophenanthridine alkaloid is Chelerythrine.

REMARKS

In response to the Office Action of November 21, 2001, claims 13, 17, 19 and 21 are amended, claims 14, 18 and 20 are canceled and new claims 22-25 are added. Claims 13 and 17-20 were rejected under 35 U.S.C. § 112, second paragraph, claims 13-15 and 21 were rejected under 35 U.S.C. § 102(b) and claims 13-21 were rejected under 35 U.S.C. § 103(a). Each of these rejections is discussed below.

Claim Objections

Claim 13 was objected to by the Examiner because the preamble recites "a isoquinoline alkaloid." In response to this objection, Applicant has amended claim 13 as suggested by the Examiner.

Rejections under 35 U.S.C. § 112, second paragraph

The Examiner has rejected claims 13 and 17-20 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of the specific rejections raised by the Examiner are discussed below.

a. Claim 13 recites "the ground biomass," which lacks antecedent basis in the claim. In response to this rejection, claim 13 has been amended to read "a ground biomass."

b. Claim 13 is incomplete for omitting essential steps. In response to this rejection, claim 13 has been amended as recommended by the Examiner and claim 14 has been canceled. Additionally, claim 21 has been amended to depend from claim 13.

c. Claims 17-20 recite the terms "dynamic mode " and "static mode," which are not clearly defined in the Specification. In response to this rejection claims 17 and 19 are amended to delete these terms and claims 18 and 20 are canceled.

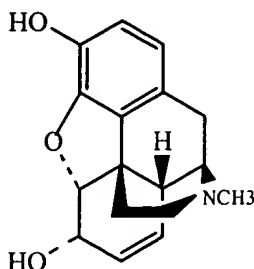
Rejection under 35 U.S.C. § 102(b)

The Court of Appeals for the Federal Circuit has stated that anticipation requires the presence in a single prior art reference of each and every element of the claimed invention. Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 1458 (Fed. Cir. 1984); Alco Standard Corp. v. Tennessee Valley Auth., 1 USPQ2d 1337, 1341 (Fed. Cir. 1986). "There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." Scripps Clinic v. Genentech Inc., 18 USPQ2d 1001, 1010 (Fed. Cir. 1991) (citations omitted).

The Examiner has rejected claims 13-15 and 21 under 35 U.S.C. § 102(b) as being anticipated by Mehlretter *et al.*, U.S. Patent No. 2,715,627. The Examiner reasons that claims 13-15 of the present invention are drawn to a method for isolation and purification of an isoquinoline alkaloid via extraction of a ground biomass of a plant with a solvent, neutralization and purification by a chromatographic method, wherein the plant is selected from a group of specific plant families. The Examiner further reasons that the extraction of isoquinoline alkaloids from plants such as poppy is well known in the art and that the most prevalent and widely extracted isoquinoline alkaloid prepared from poppy was morphine as described by Mehlretter *et al.*, U.S. Patent No. 2,175,627. The Examiner provides that Mehlretter *et al.* teach a protocol for the extraction of morphine from poppy which includes extraction with mineral acid, alkali precipitation (neutralization), evaporation (concentration) and then optionally, purification via ion exchange chromatography.

In response to this rejection, independent claim 13 has been amended and new claims 22-25 have been added. As amended, claim 13 is now drawn to a method for the isolation and purification of aporphine or benzophenanthridine alkaloids only. New claims 22-25 are drawn to methods for the isolation and purification of specific aporphine and benzophenanthridine alkaloids. As noted by the Examiner, Mehlretter *et al.* disclose and claim a method for

extracting opium alkaloids, specifically morphine and associated alkaloids from poppy. (Mehlretter *et al.*, col. 1, lines 21-25). Mehlretter *et al.* do not disclose or suggest that their method can be extended to other alkaloids. Morphine (shown below) is neither an aporphine or benzophenanthridine alkaloid, but rather is a phenanthrene alkaloid.



As noted above, anticipation requires the presence in a single prior art reference of each and every element of the claimed invention. The present invention, as amended, describes and claims a method for the isolation and purification of aporphine and benzophenanthridine alkaloids. Applicant maintains that as amended claims are not anticipated by the Mehlretter *et al.* reference which teaches a method for extracting phenanthrene alkaloids.

Rejections under 35 U.S.C. § 103(a)

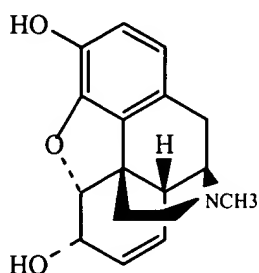
The Examiner has rejected claims 13-21 under 35 U.S.C. § 103(a), as being unpatentable over Mehlretter *et al.*, U. S. Patent No. 2,715,627. The Examiner reasons, that based upon the teachings of Mehlretter *et al.* as discussed above, one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

The Examiner bears the burden of establishing a prima facie case of obviousness. In determining obviousness, one must focus on Applicant's invention as a whole. Symbol Technologies Inc. v. Opticon Inc., 19 USPQ2d 1241, 1246 (Fed. Cir. 1991). The primary inquiry is:

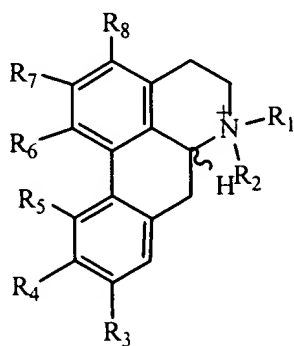
whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have had a reasonable likelihood of success. . . . Both the suggestion and the expectation of success must be found in the prior art, not in the applicant's disclosure.

In re Dow Chemical, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). Applicant asserts that the cited reference does not disclose or suggest the present invention, as amended, and therefore, does not render the present invention obvious.

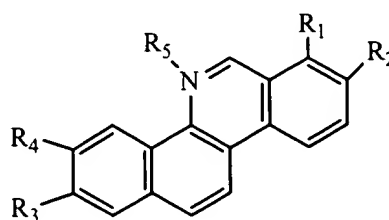
As noted above, the present invention, as amended, is limited to a method for the isolation and purification of aporphine or benzophenanthridine alkaloids only. Additionally, new claims 22-25 are drawn to methods for the isolation and purification of specific aporphine and benzophenanthridine alkaloids. As noted by the Examiner, Mehlretter *et al.* disclose and claim a method for extracting opium alkaloids from poppy. Morphine, is neither an aporphine or benzophenanthridine alkaloid, but rather is a phenanthrene alkaloid having the following structure:



The structure of morphine is very different from the structures of both aporphine and benzophenanthridine alkaloids which have the following structures, respectively.



aporphine



benzophenanthridine

For this reason, Applicant maintains that it is not at all obvious that a method used to extract morphine related alkaloids could obviously be extended to other types of alkaloids, specifically

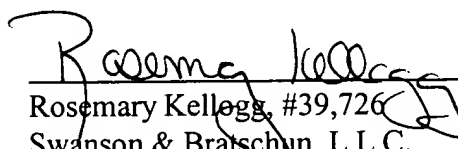
aporphine and benzophenanthridine alkaloids. Applicant maintains, therefore, that the claims, as amended, are not obvious in light of the Mehlretter *et al.* reference.

Applicant believes that the pending claims are in condition for allowance. If it would be helpful to obtain favorable consideration of this case, the Examiner is encouraged to call and discuss this case with the undersigned.

This constitutes a request for any needed extension of time and an authorization to charge all fees therefore to deposit account No. 19-5117, if not otherwise specifically requested. The undersigned hereby authorizes the charge of any fees created by the filing of this document or any deficiency of fees submitted herewith to be charged to deposit account No. 19-5117.

Respectfully submitted,

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Marked up version showing changes to specification under 37 C.F.R. § 1.121(b)

Terry *et al.* have disclosed a method of treating vascular disorders by administration of *Xanthoxylum* (*Zanthoxylum*). (Terry *et al.* United States Patent [Application Serial] No. 5,562,906, issued October 8, 1996). Terry *et al.* did not disclose any specific compounds from the *Zanthoxylum* that could be used for this purpose. Other reported uses of extracts from the *Zanthoxylum* genus include use in herbal compositions (Japanese Patent No. 07324039JP, 1995); use in herbal powders for the treatment of addictive diseases (United States Patent No. 5,198,230, 1993); use as a remedy for anemia and arthritis (United States Patent No. 4,767,626, 1988); use in a cream to enhance male sexual function (Japan Patent No. 06211678JP, 1994); and use as a hair tonic (Japan Patent No.05201833JP, [1976] 1993).

Marked up version showing changes to claims under 37 C.F.R. § 1.121(c)

13. (amended) A method for the isolation and purification of [a] an isoquinoline [alkaloids] alkaloid selected from an aporphine or benzophenanthridine alkaloid from a plant; said method comprising:

(a) extraction of [the] a ground biomass of a plant containing [isoquinoline] aporphine or benzophenanthridine alkaloids with a solvent; [and]

(b) neutralization and concentration of the neutralized extract; and

(c) purification of said extract by a chromatographic method.

17. (amended) The method in claim 13 wherein the biomass is extracted in a [dynamic mode] vat extractor.

19. (amended) The method of claim 13 wherein the biomass is extracted in a [static mode] column extractor.

21. (amended) The method of claim [14] 13 wherein said chromatographic method is selected from ion exchange chromatography, absorption chromatography, reverse phase chromatography, size exclusive chromatography, ultra-filtration or a combination of two or more of these methods.